

DERWENT- 2000-271497

ACC-NO:

DERWENT- 200319

WEEK:

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**TITLE:** Forming a lubricative film for cold working by contacting the metal substrate with an electrolyte solution, passing an electric current through the substrate, and applying a lubricant coating to the surface of the film

**INVENTOR:** KOBAYASHI, N; MORIYAMA, A

**PATENT-ASSIGNEE:** NIPPON PARKERIZING CO LTD[HOOL] , HENKEL CORP[HENK] , NIHON PARKERIZING KK[HOOL] , NIHON PARKERISING CO LTD[HOOL]

**PRIORITY-DATA:** 1999JP-0206973 (July 22, 1999) , 1998JP-0258765 (September 11, 1998)

**PATENT-FAMILY:**

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
TW 489140 A	June 1, 2002	N/A	000	C25D 011/36
WO 200015879 A1	March 23, 2000	E	025	C25D 011/36
CN 1248644 A	March 29, 2000	N/A	000	C25D 011/36
JP 2000144494 A	May 26, 2000	N/A	012	C25D 011/36
KR 2000023075 A	April 25, 2000	N/A	000	C25F 001/00
EP 1119652 A1	August 1, 2001	E	000	C25D 011/36

**DESIGNATED-STATES:** CA US AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

**APPLICATION-DATA:**

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
TW 489140A	N/A	1999TW-0115338	September 6, 1999
WO 200015879A1	N/A	<u>1999WO-US21117</u>	September 13, 1999
CN 1248644A	N/A	1999CN-0118600	September 13, 1999
JP2000144494A	N/A	1999JP-0206973	July 22, 1999
KR2000023075A	N/A	1999KR-0038691	September 10, 1999
EP 1119652A1	N/A	1999EP-0946930	September 13, 1999
EP 1119652A1	N/A	<u>1999WO-US21117</u>	September 13, 1999
EP 1119652A1	Based on	WO 200015879	N/A

**INT-CL (IPC):** B21C001/00, B21J003/00 , C10M173/00 , C10N040:24 , C10N080:00 ,  
C23C028/00 , C25D011/36 , C25F001/00

**ABSTRACTED-PUB-NO:** WO 200015879A**BASIC-ABSTRACT:**

NOVELTY - A lubricative film is formed on a metal substrate, using an electrolyte solution having zinc cations and phosphate anions, and an auxiliary acid. An electric current is passed through the substrate while in contact with the electrolyte solution. Water or oil-based lubricant coating is applied to the surface of the film when it is no longer in contact with the solution.

DETAILED DESCRIPTION - Process for forming a lubricative film for cold working on a metal substrate comprises: (a) contacting the metal substrate with an aqueous electrolyte solution containing dissolved zinc cations, phosphate anions, and at least one dissolved auxiliary acid; (b) passing an electric current through the metal substrate while it remains in contact with the electrolyte solution; and (c) applying a water or oil-based lubricant coating to the exterior surface of the solid phosphate conversion coating, after which the contact between the electrolyte solution and the metal substrate has been stopped.

USE - For forming a lubricative film i.e. phosphate conversion coating, for cold working on metal substrates.

ADVANTAGE - It is possible to form a thick chemical conversion film of a phosphate without generating sludge. A thick chemical conversion film can also be formed at a high level of productivity. A thick chemical conversion film of a phosphate can also be formed on materials other than carbon steel, namely, stainless steel or non-ferrous materials. If the thick chemical conversion film of a phosphate formed by the method of the present invention is coated with conventional water or oil-based lubricant, an excellent lubricative film for cold working can be obtained.

CHOSEN- Dwg.0/3

**DRAWING:**

**TITLE-** FORMING LUBRICATE FILM COLD WORK CONTACT METAL SUBSTRATE

**TERMS:** ELECTROLYTIC SOLUTION PASS ELECTRIC CURRENT THROUGH SUBSTRATE  
APPLY LUBRICATE COATING SURFACE FILM

**DERWENT-CLASS:** M11 P51 P52

**CPI-CODES:** M11-F;

**SECONDARY-ACC-NO:**

**CPI Secondary Accession Numbers:** C2000-082989

DERWENT-ACC-NO: 1998-179469  
DERWENT-WEEK: 200229  
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TITLE: Electrochemical phosphating method of metal surfaces - comprises lubricant after phosphating and electrochemical phosphating through cathodic process using aqueous solution

INVENTOR: BJERRUM, N J; CHRISTENSEN, E ; STEENBERG, T ; ERIK, C ; NIELS JANNIKSEN, B ; THOMAS, S

PATENT-ASSIGNEE: DANFOSS AS[DANA]

PRIORITY-DATA: 1996DK-0000910 (August 29, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9809006 A1 011/36	March 5, 1998	E	012	C25D
DK 9600910 A 011/36	March 1, 1998	N/A	000	C25D
AU 9739385 A 011/36	March 19, 1998	N/A	000	C25D
GB 2331997 A 011/36	June 9, 1999	N/A	000	C25D
EP 922125 A1 011/36	June 16, 1999	E	000	C25D
SE 9900699 A 011/36	February 26, 1999	N/A	000	C25D
DE 19781959 T 011/36	October 14, 1999	N/A	000	C25D
GB 2331997 B 011/36	July 26, 2000	N/A	000	C25D
DK 173338 B 011/36	July 31, 2000	N/A	000	C25D
US 6346186 B1 011/36	February 12, 2002	N/A	000	C25D

DESIGNATED-STATES: AM AT AU BA BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IL I  
S JP KR KZ LT LU LV MD MK MX NO NZ PL PT RO RU SE SG SI SK TR UA US UZ VN YU AT  
BE CH DE DK EA ES FI FR GB GR IE IT LU MC NL PT SE AT CH DE FR GB LI SE

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
WO 9809006A1	N/A	1997WO-DK00344	August 26, 1997
DK 9600910A	N/A	1996DK-0000910	August 29, 1996
AU 9739385A	N/A	1997AU-0039385	August 26, 1997
AU 9739385A	Based on	WO 9809006	N/A
GB 2331997A	N/A	1997WO-DK00344	August 26, 1997
GB 2331997A	N/A	1999GB-0003745	February 18, 1999

GB 2331997A	Based on	WO 9809006	N/A
EP 922125A1	N/A	1997EP-0936615	August 26, 1997
EP 922125A1	N/A	<u>1997WO-DK00344</u>	August 26, 1997
EP 922125A1	Based on	WO 9809006	N/A
SE 9900699A	N/A	<u>1997WO-DK00344</u>	August 26, 1997
SE 9900699A	N/A	<u>1999SE-0000699</u>	February 26, 1999
DE 19781959T	N/A	1997DE-1081959	August 26, 1997
DE 19781959T	N/A	<u>1997WO-DK00344</u>	August 26, 1997
DE 19781959T	Based on	WO 9809006	N/A
GB 2331997B	N/A	<u>1997WO-DK00344</u>	August 26, 1997
GB 2331997B	N/A	<u>1999GB-0003745</u>	February 18, 1999
GB 2331997B	Based on	WO 9809006	N/A
DK 173338B	N/A	1996DK-0000910	August 29, 1996
DK 173338B	Previous Publ.	DK 9600910	N/A
US 6346186B1	CIP of	<u>1997WO-DK00344</u>	August 26, 1997
US 6346186B1	CIP of	<u>1999US-0242762</u>	June 14, 1999
US 6346186B1	N/A	2000US-0633748	August 7, 2000

INT-CL\_(IPC): C23C022/12; C23C022/22 ; C25D011/36

ABSTRACTED-PUB-NO: GB 2331997B

BASIC-ABSTRACT: A method for electrochemical phosphating of metal surfaces, particularly stainless steel used with cold forming of metal workpieces, the method comprises a lubricant after phosphating, partic Mo disulphide or Na stearate, and electrochemical phosphating is effected through a cathodic process using an aqueous phosphating soln. contg. 0.5-100g Ca<sup>2+</sup>/l, 0.5-100g Zn<sup>2+</sup>/l, 5-400g PO<sub>4</sub><sup>3-</sup>/l, 0 100g NO<sub>3</sub><sup>-</sup>/l, 0-100g ClO<sub>3</sub><sup>-</sup>/l and 0-50g F<sup>-</sup> or C;/l by which the soln. temp. is 95 deg. C, the pH value of the soln. is 0.5-5 and current density of 0.1250 mA/cm<sup>2</sup>.

USE - For electrochemical phosphating of metal surfaces.

ADVANTAGE - The addition of Ca leads to an improvement of precipitation.

ABSTRACTED-PUB-NO: US 6346186B

EQUIVALENT-ABSTRACTS: A method for electrochemical phosphating of metal surfaces, particularly stainless steel used with cold forming of metal workpieces, the method comprises a lubricant after phosphating, partic Mo disulphide or Na stearate, and electrochemical phosphating is effected through a cathodic process using an aqueous phosphating soln. contg. 0.5-100g Ca<sup>2+</sup>/l, 0.5-100g Zn<sup>2+</sup>/l, 5-400g PO<sub>4</sub><sup>3-</sup>/l, 0 100g NO<sub>3</sub><sup>-</sup>/l, 0-100g ClO<sub>3</sub><sup>-</sup>/l and 0-50g F<sup>-</sup> or C;/l by which the soln. temp. is 95 deg. C, the pH value of the soln. is 0.5-5 and current density of 0.1250 mA/cm<sup>2</sup>.

USE - For electrochemical phosphating of metal surfaces.

ADVANTAGE - The addition of Ca leads to an improvement of precipitation.

A method for electrochemical phosphating of metal surfaces, particularly stainless steel used with cold forming of metal workpieces, the method comprises a lubricant after phosphating, partic Mo disulphide or Na stearate, and electrochemical phosphating is effected through a cathodic process using an

aqueous phosphating soln. contg. 0.5-100g Ca<sup>2+</sup>/l, 0.5-100g Zn<sup>2+</sup>/l, 5-400g PO<sub>4</sub><sup>3-</sup>/l, 0-100g NO<sub>3</sub><sup>-</sup>/l, 0-100g ClO<sub>3</sub><sup>-</sup>/l and 0-50g F<sup>-</sup> or C<sup>-</sup>/l by which the soln. temp. is 95 deg. C, the pH value of the soln. is 0.5-5 and current density of 0.1250 mA/cm<sup>2</sup>.

USE - For electrochemical phosphating of metal surfaces.

ADVANTAGE - The addition of Ca leads to an improvement of precipitation.

WO 9809006A

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:

ELECTROCHEMICAL PHOSPHATING METHOD METAL SURFACE COMPRISE LUBRICATE AFTER PHOSPHATING ELECTROCHEMICAL PHOSPHATING THROUGH CATHODE PROCESS AQUEOUS SOLUTION

DERWENT-CLASS: A97 M11

CPI-CODES: A12-W12E; M11-F;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; P1707 P1694 D01 ; S9999 S1616 S1605

Polymer Index [1.2]

018 ; P8004 P0975 P0964 D01 D10 D11 D50 D82 F34 ; S9999 S1616 S1605

Polymer Index [1.3]

018 ; ND01 ; Q9999 Q8742 ; B9999 B3407 B3383 B3372

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1998-057770